SPEC® CINT2006 Result
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Dell Inc.

PowerEdge R510 (Intel Xeon E5607, 2.26 GHz)

$SPECint®2006 =$ 27.6

$SPECint\_base2006 =$ 26.9

CPU2006 license: 55	**Test date:** May-2011
Test sponsor: Dell Inc.	**Hardware Availability:** Feb-2011
Tested by: Dell Inc.	**Software Availability:** Apr-2011

400.perlbench 20.3 / 17.7
401.bzip2 13.9 / 13.3
403.gcc 19.0 / 18.3
429.mcf 34.5 / 32.8
445.gobmk 17.1 / 16.8
456.hmmer 32.9 / 32.4
458.sjeng 18.6 / 18.0
462.libquantum 604
464.h264ref 28.8 / 26.7
471.omnetpp 17.4 / 15.8
473.astar 13.7 / 16.2
483.xalancbmk 23.9 / 25.3

SPECint_base2006 = 26.9
SPECint2006 = 27.6

Hardware

CPU Name:	Intel Xeon E5607
CPU Characteristics:	
CPU MHz:	2267
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (6 x 8 GB 2Rx4 PC3-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem:	2 x 146 GB 15000 RPM SAS
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V9.01

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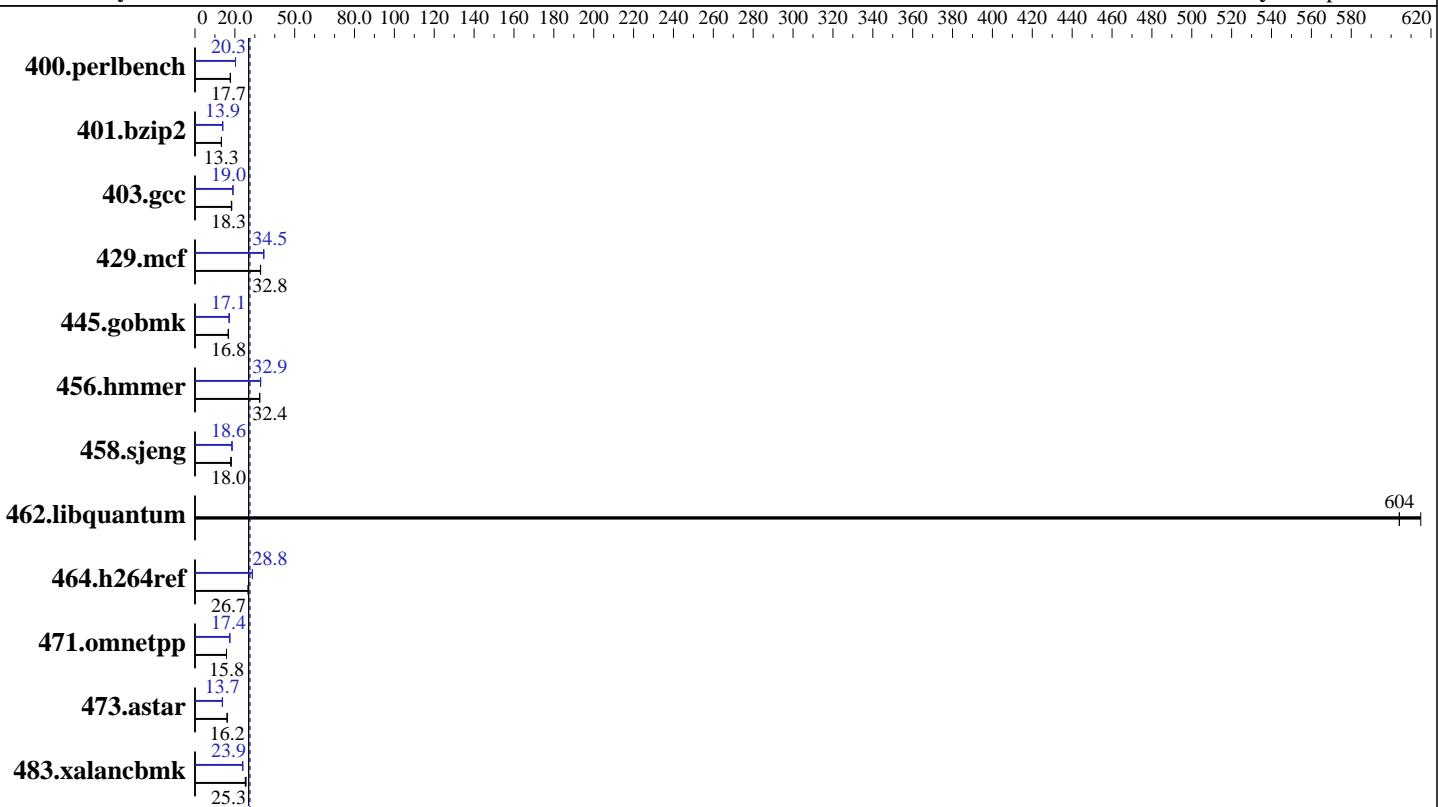$SPECint\_base2006 =$ 26.9

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Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
400.perlbench	550	17.8	**551**	**17.7**	551	17.7	481	20.3	**481**	**20.3**	481	20.3
401.bzip2	728	13.3	**728**	**13.3**	728	13.3	695	13.9	695	13.9	**695**	**13.9**
403.gcc	**439**	**18.3**	437	18.4	442	18.2	423	19.0	423	19.0	**423**	**19.0**
429.mcf	278	32.8	277	32.9	**278**	**32.8**	264	34.5	**265**	**34.5**	265	34.5
445.gobmk	**624**	**16.8**	632	16.6	624	16.8	612	17.1	612	17.1	**612**	**17.1**
456.hmmer	288	32.4	**288**	**32.4**	288	32.4	**284**	**32.9**	283	32.9	284	32.9
458.sjeng	667	18.1	**671**	**18.0**	672	18.0	**652**	**18.6**	652	18.5	652	18.6
462.libquantum	34.3	604	33.7	615	**34.3**	**604**	34.3	604	33.7	615	**34.3**	**604**
464.h264ref	827	26.8	830	26.7	**828**	**26.7**	**769**	**28.8**	769	28.8	768	28.8
471.omnetpp	395	15.8	**395**	**15.8**	395	15.8	358	17.5	359	17.4	**358**	**17.4**
473.astar	435	16.1	434	16.2	**434**	**16.2**	510	13.8	511	13.7	**511**	**13.7**
483.xalancbmk	274	25.2	**272**	**25.3**	269	25.6	288	23.9	**288**	**23.9**	289	23.9

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
Data Reuse = Disabled (Default = Enabled)
```

General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5
The Dell PowerEdge R510 and
the Bull NovaScale R450 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R510 model.
```

Base Compiler Invocation

C benchmarks:
```
icc -m64
```

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Base Compiler Invocation (Continued)

C++ benchmarks:
    icpc -m64

Base Portability Flags

        400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
           401.bzip2: -DSPEC_CPU_LP64
            403.gcc: -DSPEC_CPU_LP64
            429.mcf: -DSPEC_CPU_LP64
          445.gobmk: -DSPEC_CPU_LP64
         456.hmmer: -DSPEC_CPU_LP64
          458.sjeng: -DSPEC_CPU_LP64
      462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
         464.h264ref: -DSPEC_CPU_LP64
         471.omnetpp: -DSPEC_CPU_LP64
            473.astar: -DSPEC_CPU_LP64
       483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
    -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs
    -L/smartheap -lsmartheap64
    -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Base Other Flags

C benchmarks:

        403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
    icc -m64

    400.perlbench: icc -m32

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Peak Compiler Invocation (Continued)

429.mcf: `icc -m32`

445.gobmk: `icc -m32`

464.h264ref: `icc -m32`

C++ benchmarks (except as noted below):
`icpc -m32`

473.astar: `icpc -m64`

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-opt-prefetch -ansi-alias`
`-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

401.bzip2: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32`
`-opt-prefetch -ansi-alias`

403.gcc: `-xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc`
`-opt-malloc-options=3 -auto-ilp32`
`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

429.mcf: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-auto-ilp32 -ansi-alias`
`-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`
`-auto-ilp32 -ansi-alias`
`-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

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Peak Optimization Flags (Continued)

```
    456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
               -ansi-alias
               -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

    458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
               -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
               -unroll4

462.libquantum: basepeak = yes

   464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
               -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
               -unroll2 -ansi-alias
               -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT
```

C++ benchmarks:

```
   471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
               -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
               -opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs
               -L/smartheap -lsmartheap
               -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

     473.astar: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
               -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
               -opt-ra-region-strategy=routine -Wl,-z,muldefs
               -L/smartheap -lsmartheap64

 483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
               -Wl,-z,muldefs -L/smartheap -lsmartheap
               -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT
```

Peak Other Flags

C benchmarks:

```
      403.gcc: -Dalloca=_alloca
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.xml

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